Camera capable of dynamic , realtime lifetime and radiometric imaging

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Technology description

A dual mode camera imaging system allowing for real time simultaneous luminescence lifetime and ratiometric intensity based imaging is described. This cost effective camera, in conjunction with BF2bdkPLA materials (bdk = beta diketonate; PLA = poly(lactic acid)) oxygen nanoprobes allows for oxygen imaging in biological contexts. Materials are tailored for lifetime, ratiometric, or dual mode imaging modes with H, Br or I substituents respectively. The power of the camera nanoprobe imaging system was demonstrated by imaging oxygen and the healing process in wounds. Importantly, inexpensive camera technology compared to others in the field. We demonstrate the utility of the camera imaging system for wound imaging and healing. Importantly, the full range Iodide substituted nanosensors (0-100% O2) are sensitive enough to distinguish and wound and keratinized skin oxygenation, even without covering the tissue before optical imaging, demonstrating the potential for non-invasive wound diagnosis. The camera can monitor and image dynamic changes in mechanochromic luminescent materials as well.

Institution

University of Virginia

Inventors

Shayn P. Cottler
Scott Seaman
James Demas
Cassandra L. Fraser

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com